

## Description

The LY8BC12L is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. It complies with IEC 61000-4-2 (ESD),  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into an ultra-small lead-free DFN1006-2 package. The small size and high ESD surge protection make it an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

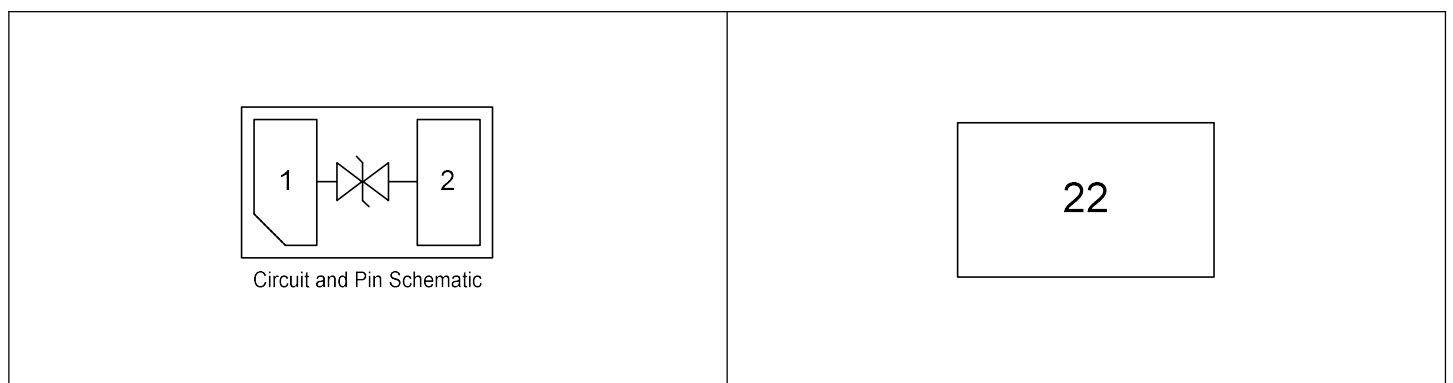
## Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 12V
- RoHS compliant
- IEC-61000-4-2 ESD  $\pm 30\text{kV}$  Air,  $\pm 30\text{kV}$  Contact
- Packaging: 7 inch reel, 10000pcs/reel

## Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Audio Players

## Pin Configuration and Marking



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ )

Parameter	Symbol	Value
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PP}$	180W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	8A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$V_{ESD}$	$\pm 30\text{kV}$ $\pm 30\text{kV}$
Ambient Temperature Range	$T_A$	$-55^\circ\text{C}$ to $+125^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	$-55^\circ\text{C}$ to $+150^\circ\text{C}$

### Electrical Characteristics ( $T_A=25^\circ\text{C}$ )

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	$V_{RWM}$		-	-	12V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	13.3V	-	-
Reverse Leakage Current	$I_R$	$V_{RWM} = 12\text{V}$	-	-	0.2 $\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}$ (8/20 $\mu\text{s}$ )	-	-	15.5V
		$I_{PP} = 8\text{A}$ (8/20 $\mu\text{s}$ )	-	-	22.5V
Junction Capacitance	$C_J$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$	-	-	30pF

**Typical Characteristic Curves ( $T_A=25^{\circ}\text{C}$ )**

Figure 1. Peak Pulse Power Rating Curve

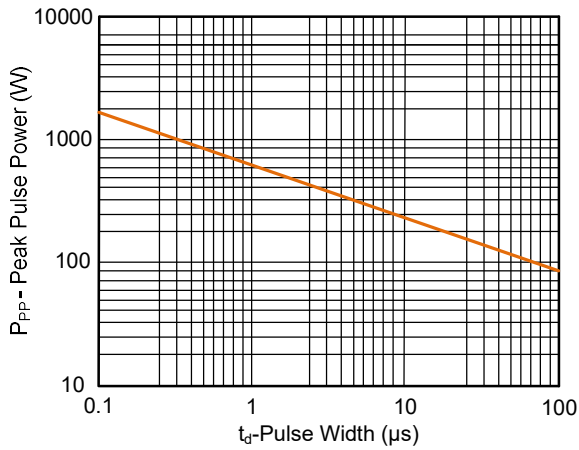


Figure 2. Pulse Derating Curve



Figure 3. Clamping Voltage vs. Peak Pulse Current

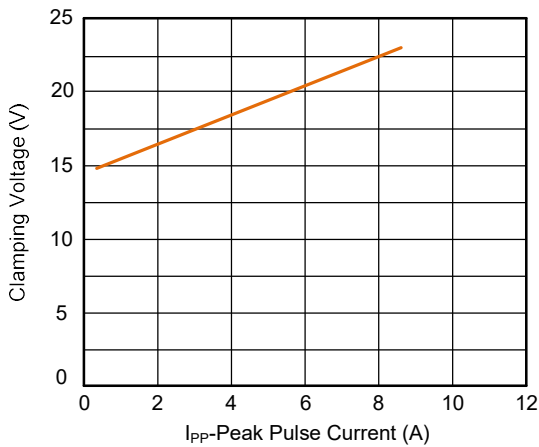


Figure 4. Junction Capacitance vs. Reverse Voltage

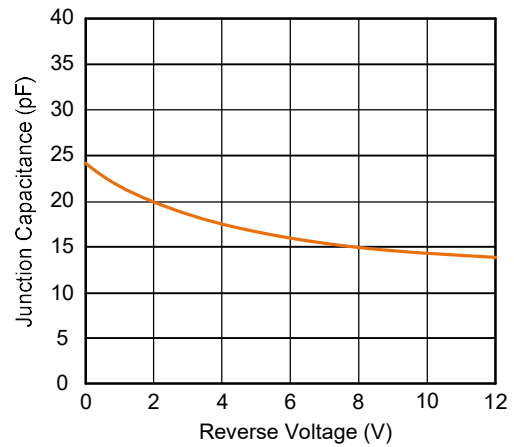


Figure 5. Pulse Waveform (8/20μs)

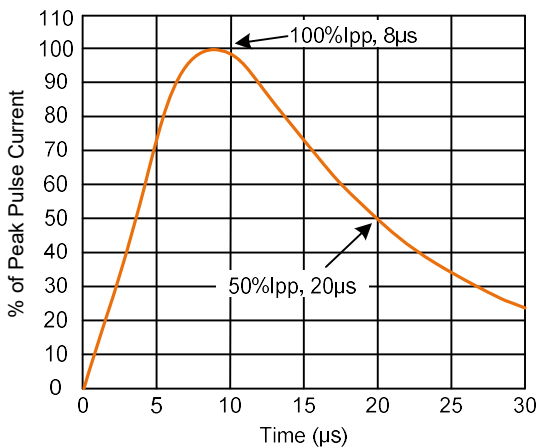
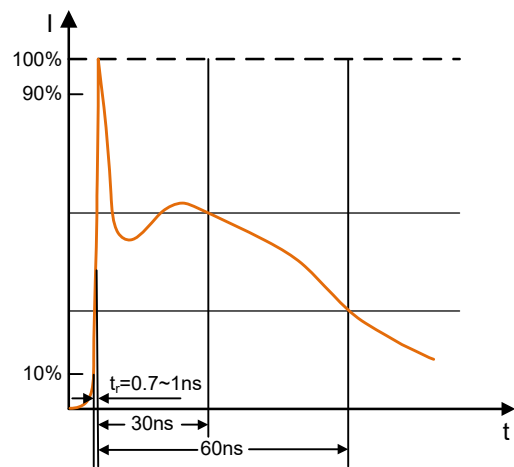


Figure 6. Pulse Waveform (IEC61000-4-2)



## Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat -Temperature Min ( $T_{S\ min}$ ) -Temperature Max ( $T_{S\ max}$ ) -Time (min to max) ( $t_s$ )	150°C 200°C 60-180 seconds
$T_{S\ max}$ to $T_L$ -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature ( $T_L$ ) -Time ( $t_L$ )	217°C 60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

### Dimensions (DFN1006-2)

